

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

two conductive layers provided as separate layers;

an insulating layer sandwiched by said two conductive  
5 layers; and

an embedded conductive layer provided to fill an opening  
formed in said insulating layer,

wherein said two conductive layers are electrically  
connected to each other with said embedded conductive layer  
10 , and

wherein said embedded conductive layer comprises an  
organic resin film containing a conductive material  
dispersed therein or an inorganic film containing a  
conducting material dispersed therein.

15 2. A semiconductor device comprising:

two conductive layers provided as separate layers;

an insulating layer sandwiched by said two conductive  
layers; and

an oxide conductive layer provided to fill an opening  
20 formed in said insulating layer,

wherein said two conductive layers are electrically  
connected to each other with said oxide conductive layer.

25 3. A semiconductor device comprising:

two conductive layers provided as separate layers;

an insulating layer sandwiched by said two conductive  
layers; and

an embedded conductive layer provided to fill an opening  
formed in said insulating layer,

30 wherein said two conductive layers are electrically  
connected to each other with said embedded conductive layer,

wherein said embedded conductive layer comprises an  
organic resin film containing a conductive material

dispersed therein or an inorganic film containing a conductive material therein, and

wherein a shape of said opening is in accordance with a shape of said embedded conductive layer embedded in said opening.

5           4. A semiconductor device comprising:

two conductive layers provided as separate layers;

an insulating layer sandwiched by said two conductive layers; and

10           an oxide conductive layer provided to fill an opening formed in said insulating layer,

wherein said two conductive layers are electrically connected to each other with said oxide conductive layer, and

15           wherein a shape of said opening is in accordance with a shape of said oxide conductive layer embedded in said opening.

20           5. A semiconductor device comprising:

two conductive layers provided as separate layers;

an insulating layer sandwiched by said two conductive layers; and

25           an embedded conductive layer provided to fill an opening formed in said insulating layer,

wherein said two conductive layers are electrically connected to each other with said embedded conductive layer,

25           wherein said embedded conductive layer comprises an organic resin film containing a conductive material dispersed therein or an inorganic film containing a conductive material dispersed therein, and

30           wherein one of said two conductive layers is provided on a flat surface formed by said embedded conductive layer.

6. A semiconductor device comprising:

two conductive layers provided as separate layers;  
an insulating layer sandwiched by said two conductive  
layers; and

5       an oxide conductive layer provided to fill an opening  
formed in said insulating layer,

wherein said two conductive layers are electrically  
connected to each other with said oxide conductive layer,  
and

10      wherein one of said two conductive layers is provided on  
a flat surface formed by said oxide conductive layer.

7. A semiconductor device according to claim 1, wherein  
said conductive material is a carbon material.

8. A semiconductor device according to claim 3, wherein  
said conductive material is a carbon material.

15      9. A semiconductor device according to claim 5, wherein  
said conductive material is a carbon material.

10. A semiconductor device according to claim 1, wherein  
said conductive material is selected from the group  
consisting of zinc oxide, aluminum flakes and nickel flakes.

20      11. A semiconductor device according to claim 3, wherein  
said conductive material is selected from the group  
consisting of zinc oxide, aluminum flakes and nickel flakes.

12. A semiconductor device according to claim 5, wherein  
said conductive material is selected from the group  
25     consisting of zinc oxide, aluminum flakes and nickel flakes.

13. A semiconductor device according to claim 2, wherein  
said oxide conductive layer comprises indium tin oxide.

14. A semiconductor device according to claim 4, wherein  
said oxide conductive layer comprises indium tin oxide.

30      15. A semiconductor device according to claim 6, wherein  
said oxide conductive layer comprises indium tin oxide.

16. A semiconductor device according to claim 1, wherein

one of said two conductive layers is in contact with an alignment film.

17. A semiconductor device according to claim 2, wherein one of said two conductive layers is in contact with an  
5 alignment film.

18. A semiconductor device according to claim 3, wherein one of said two conductive layers is in contact with an alignment film.

19. A semiconductor device according to claim 4, wherein  
10 one of said two conductive layers is in contact with an alignment film.

20. A semiconductor device according to claim 5, wherein one of said two conductive layers is in contact with an alignment film.

15 21. A semiconductor device according to claim 6, wherein one of said two conductive layers is in contact with an alignment film.

22. A semiconductor device according to claim 1, 2, 3,  
20 4, 5 or 6 is applied to a display device of a cellular phone.

23. A semiconductor device according to claim 1, 2, 3,  
4, 5 or 6 is applied to a display device of a camcorder.

24. A semiconductor device according to claim 1, 2, 3,  
25 4, 5 or 6 is applied to a display device of a portable computer.

25. A semiconductor device according to claim 1, 2, 3,  
4, 5 or 6 is applied to a display device of a head mounting display.

26. A semiconductor device according to claim 1, 2, 3,  
30 4, 5 or 6 is applied to a display device of a rear type projector.

27. A semiconductor device according to claim 1, 2, 3,

isplay device of a front type  
sing a semiconductor device  
ductive layer;  
ulating layer over said first  
ing in said insulating layer to  
e layer at a bottom of said  
dded conductive layer to cover  
i opening;  
shing said embedded conductive  
t only said opening is filled  
layer; and  
ond conductive layer on said  
dded conductive layer.  
cing a semiconductor device  
ductive layer;  
ulating layer over said first  
ing in said insulating layer to  
e layer at a bottom of said  
de conductive layer by a spin  
id insulating layer and said  
lishing said oxide conductive  
t only said opening is filled  
er; and  
ond conductive layer on said

insulating layer and said oxide conductive layer.

30. A method for producing a semiconductor device comprising:

a step of forming a first conductive layer;

5 a step of forming an insulating layer over said first conductive layer;

a step of forming an opening in said insulating layer to expose said first conductive layer at a bottom of said opening;

10 a step of forming an embedded conductive layer to cover said insulating layer and said opening;

a step of forming a second conductive layer on said embedded conductive layer;

15 a step of patterning said second conductive layer to a desired pattern; and

a step of etching said embedded conductive layer by using said second conductive layer as a mask in a self alignment manner.

31. A method for producing a semiconductor device comprising:

a step of forming a first conductive layer;

a step of forming an insulating layer over said first conductive layer;

25 a step of forming an opening in said insulating layer to expose said first conductive layer at a bottom of said opening;

a step of forming an oxide conductive layer by a spin coating method to cover said insulating layer and said opening;

30 a step of forming a second conductive layer on said oxide conductive layer;

a step of patterning said second conductive layer to a

desired pattern, and

a step of etching said oxide conductive layer by using said second conductive layer as a mask in a self alignment manner.

5       32. A method for producing a semiconductor device according to claim 28, wherein said embedded conductive layer comprises an organic resin film containing a conductive material dispersed therein or an inorganic film containing a conductive material dispersed therein.

10      33. A method for producing a semiconductor device according to claim 30, wherein said embedded conductive layer comprises an organic resin film containing a conductive material dispersed therein or an inorganic film containing a conductive material dispersed therein.

15      34. A method for producing a semiconductor device according to claim 32, wherein said conductive material is a carbon material.

20      35. A method for producing a semiconductor device according to claim 33, wherein said conductive material is a carbon material.

36. A method for producing a semiconductor device according to claim 32, wherein said conductive material is selected from the group consisting of zinc oxide, aluminum flakes and nickel flakes.

25      37. A method for producing a semiconductor device according to claim 33, wherein said conductive material is selected from the group consisting of zinc oxide, aluminum flakes and nickel flakes.

30      38. A method for producing a semiconductor device according to claim 29, wherein said oxide conductive layer comprises indium tin oxide.

39. A method for producing a semiconductor device

according to claim 31, wherein said oxide conductive layer comprises indium tin oxide.